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A Self-Determination Theory Perspective on Attachment, Need Satisfaction, and Well-Being in a Sample of Athletes: A Longitudinal Study

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Abstract

The current study aimed to examine whether: (a) mean differences and changes in athletes' attachment style predicted psychological need satisfaction within two diverse relational contexts (coach and parent) and well-being, and (b) mean differences and changes in need satisfaction within the two relational contexts predicted well-being. One hundred and ten athletes aged between 15-32 years old completed a multi-section questionnaire at three time points over a span of 6 months to assess the main study variables. Multilevel modelling revealed that insecure attachment styles (anxious and avoidant) predicted well-being outcomes at the within- and between-person levels. Avoidant attachment predicted need satisfaction within the parent relational context at both levels and need satisfaction within the coach relational context at the between-person level. Need satisfaction within both relational contexts predicted various well-being outcomes at the between-person level, whilst need satisfaction within the parent relational context predicted vitality at the within-person level.

Keywords: basic psychological needs, multilevel modeling, attachment styles

A Self-Determination Theory Perspective on Attachment, Need Satisfaction, and Well-Being in a Sample of Athletes: A Longitudinal Study

Attachment theory (Bowlby, 1969/1982) and self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2002) are established frameworks that have been extensively employed to enhance understanding of relationship processes and psychological functioning (e.g., Davis, Jowett, & Lafrenière, 2013; Mikulincer & Shaver, 2008; Patrick, Knee, Canevello, & Lonsbary, 2007; Vansteenkiste & Ryan, 2013). Over the past decade, there has been research, albeit limited, that started to investigate in an integrative manner the postulates of attachment theory, basic psychological needs theory (BPNT; Deci & Ryan, 2000), and well-being (e.g., Felton & Jowett, 2013; La Guardia, Ryan, Couchman, & Deci, 2000; Leak & Cooney, 2001; Wei, Shaffer, Young, & Zakalik, 2005). Although the findings of this research supply important theoretical and practical implications, the scope of the findings is limited by the employment of the cross-sectional nature of research designs. Thus, the purpose of the current study was to expand the previous research by examining whether mean levels of psychological needs satisfaction and well-being at time point one and changes in these factors at time points two and three of athletes who participate in competitive sport could be predicted by their attachment style.

Attachment Theory, Basic Needs, and Well-Being: An Overview

Attachment theory derived from observations of how infants interacted with their primary caregiver (predominantly mother), and aimed to promote an understanding of the attachments that are formed in such close relationships (Bowlby, 1969/1982). In the late 1970s, Ainsworth and colleagues (1978) conducted systematic observations of infants interacting with their mothers and strangers, which led them to propose three styles of attachment: secure, anxious-ambivalent, and avoidant. Individuals with *secure* attachment

display confidence in the availability of close others (e.g., parent) for comfort and support in times of need. Those who display the *anxious-ambivalent* attachment style have a desire for proximity and intimacy to close others even in non-distressing conditions, and under stressful conditions (e.g., separation) they can display excessive distress and may withdraw in anger even if support is offered from the close other. Finally, the *avoidant* attachment style is displayed in individuals who display little distress during separation from their close other and display few attempts at maintaining contact.

In the late 1980s, Hazan and Shaver (1987) produced seminal research that supported Ainsworth et al.'s (1978) categorisation of attachment however this time within an adult attachment context. Since then adult attachment research has flourished generating results that highlight the importance of secure attachments for experiencing greater relationship quality and better psychological adjustment (see Mikulincer & Shaver, 2007, for a comprehensive review). Moreover, a series of studies (e.g., Felton & Jowett, 2013; La Guardia et al., 2000; Patrick et al., 2007; Wei et al., 2005) have shown that securely attached individuals, or individuals who display low levels of anxious and avoidant attachment, perceive that their basic psychological needs of autonomy, competence, and relatedness are more satisfied within close relationships than individuals who demonstrate an insecure attachment style (i.e., anxious-ambivalent, avoidant). It has also been evidenced that secure attachments are more likely than other attachment styles to be associated with experiencing greater levels of well-being (La Guardia et al., 2000; Patrick et al., 2007) and lower levels of distress (Wei et al., 2005).

Research within the field of sport psychology has reported complementary findings to the social psychology research, such that athletes reporting high levels of anxious or avoidant attachment are more likely to display negative outcomes in the form of poor relationship quality, eating psychopathology, and reduced well-being (e.g., Davis & Jowett, 2010; Davis

et al., 2013; Shanmugam, Jowett, & Meyer, 2011, Felton & Jowett, 2013). In their examination of coach-athlete dyads, Davis and colleagues (2013) reported negative associations between both athlete and coach attachment insecurity and perceptions of relationship quality. In particular, avoidant attachment was shown to have a detrimental effect on relationship quality. Felton and Jowett (2013) also observed that athletes reporting high levels of anxious or avoidant attachment reported negative experiences of basic psychological needs satisfaction within both the coach and parent relational contexts. Basic needs satisfaction within these relational contexts was also shown to mediate the association between athlete attachment and well-being, a finding also reported in the social psychology research (La Guardia et al., 2000; Leak & Cooney, 2001).

Collectively, these findings have importance for enhancing our understanding of the impact attachment styles have on important developmental factors, such as psychological needs satisfaction and well-being; however, they also have apparent limitations. These research studies (e.g., Felton & Jowett, 2013; La Guardia et al., 2000) have examined the associations between attachment styles, psychological needs, and well-being utilizing cross-sectional research designs, restricting the scope of the results to mainly discussions of between-person differences at the specific moment in time that the study took place. Although La Guardia et al. (2000) did analyse within-person differences in attachment, they performed within-person difference testing on several different attachments, including attachment to mother, father, and best friend) as opposed to testing an individual's variability in one attachment over time. Early research exploring the variability of attachment over time demonstrated that variations in self-reported attachment style were evident in data taken at intervals from as little as 1 week to several months (Baldwin & Fehr, 1995). Changes in attachment security at six month intervals have also been demonstrated in research exploring attachment within specific relationships (Asendorpf & Wilpers, 2000). Similarly, Davila and

colleagues (Davila, Karney, & Bradbury, 1999) concluded that changes in attachment style were evident within the first two years of marriage. Specifically, self-reported attachment styles were seen to become more secure and this security was associated with increased marital satisfaction. In conducting a meta-analysis examining the stability of attachment from infancy to adulthood, Fraley (2002) concluded that a moderate degree of stability exists in attachment style from infancy to adulthood. Fraley's conclusions were supported by the prototype hypothesis of attachment that states early experiences are retained and influence attachment behaviour during an individual's life (see Sroufe, Egeland, & Kreutzer, 1990 for a detailed discussion of prototype ideas). Furthermore, Fraley stated that short-term disturbances in an individual's environment can impact upon attachment security; however an enduring change in attachment style is only likely following fundamental change to the individual's environment (e.g., social relationship).

Previous research has also demonstrated that attachment can predict changes in relationship satisfaction and functioning over time (e.g., Rholes, Simpson, Campbell, & Grich, 2001; Holland, Fraley, & Roisman, 2012). In their examination of the transition to parenthood, Rholes et al., reported that insecure attachment predicted changes in marital satisfaction and functioning over a six month period. Similarly, insecure attachment styles measured at one time point have been shown to be negatively associated with self-reported and observed relationship functioning one year later within dating couples (Holland et al., 2012). Studies examining the variability in and impact of attachment over time have demonstrated that small changes can occur within a relatively short period of time (e.g., six months) and attachment styles have the potential to predict change in relational outcomes. The work by Fraley (2002) also suggests that, whilst attachment styles are likely to remain stable across the lifespan and different stages of development, there is still the possibility of small, short-term change. However there currently exists no research that has examined the

attachment styles of athletes over time, nor the ability of attachment styles to predict change in important relational factors such as psychological needs satisfaction. Thus, the present study aimed to extend cross-sectional research findings of previous research by examining the associations between attachment styles, basic psychological needs, and well-being longitudinally using data collected at three time points. A longitudinal research design should allow for a better understanding of the theoretical and practical significance of these associations.

The Purported Association of Basic Psychological Needs and Well-Being

The basic psychological needs theory (BPNT; Deci & Ryan, 2000) identifies three basic needs which must be satisfied in order to ensure an individual's "ongoing psychological growth, integrity, and well-being" (p. 229). These needs include autonomy, competence, and relatedness. The need for *autonomy* refers to needing to feel volitional in one's action and to be the originator of these actions (deCharms, 1968). The notion of autonomy does not refer to independence within BPNT; therefore an individual could happily choose to depend on others, as long as the action originates from the individual and is volitional (Deci, La Guardia, Moller, Scheiner, & Ryan, 2006). The need for *competence* refers to needing to interact effectively with the environment to produce desired outcomes (White, 1959). Finally, the need for *relatedness* refers to the need to feel connected to and understood by others (Baumeister & Leary, 1995).

Research has frequently supported the positive associations between satisfaction of the basic needs and indexes of well-being (e.g., Gagné, Ryan, & Bargmann, 2003; La Guardia et al., 2000; Reinboth, Duda, & Ntoumanis, 2004). For example, La Guardia et al. (2000) found that psychological need satisfaction within specific relationships (e.g., romantic, parental, friendships) results in enhanced well-being. Similarly, it has been reported that

when athletes experience satisfaction of their basic needs within the sport setting they report increased perceptions of well-being (e.g., Adie, Duda, & Ntoumanis, 2008; Gagné et al., 2003; Reinboth et al., 2004). It has also been shown that satisfaction of athletes' basic needs within the coach relational context is positively associated to athlete well-being (Felton & Jowett, 2013). It is important to take note of the distinct context of basic need satisfaction used across study domains. With the exception of Felton and Jowett (2013), research employing sport performers has examined need satisfaction within the *sport context* in comparison to research employing non-sport performers that has examined need satisfaction within the *relationship context*. This distinction between contexts may be important to the contributions these findings make to the our understanding of basic psychological needs theory as the context in which psychological needs are satisfied might have a differential predictive power. Whilst it may be important to know that need satisfaction within an environmental context (e.g., relationship, sport, school, work) as a whole has an impact upon individuals' well-being, specific information concerning the individual relationships that are present within the environment may provide greater scope and specificity for predicting well-being outcomes

While most of the research conducted in the area of needs satisfaction is cross-sectional, a study by Reinboth and Duda (2006) employed a longitudinal research design and attempted to assess satisfaction of needs (only the need of relatedness) within the context of the coach-athlete relationship and its association with well-being. They reported that changes in the athletes' perceptions of satisfaction of the need for relatedness with the coach predicted significant changes in vitality over a five month period. This is the only study that has examined associations when the target of basic need satisfaction (relatedness in this case) has solely been a specific relational context. The present study aimed to extend this line of inquiry in order to examine whether changes in need satisfaction within the coach-athlete and

parent-athlete relational contexts, two important relationships in an athlete's growth and development (Wylleman, De Knop, Verdet, & Cecič-Erpič, 2007), predicted changes in well-being. Through the examination of need satisfaction within these two relational contexts the findings of the current study could highlight how changes in perceptions of need satisfaction over time affect individuals' experiences of well-being. This information could support previous cross-sectional research (e.g., La Guardia et al., 2000; Wei et al., 2005) that has reported the importance of need satisfaction for optimal well-being, whilst going beyond this research to show how these associations change over time. Such findings would also have the potential to inform interventions aimed at enhancing the well-being experienced by individuals.

The Present Study

The aims of the present study were two-fold. First, it aimed to investigate whether within-person changes (i.e., the change in an individual's scores across the time-points) and between-person differences (i.e., the difference in an individual's scores across the time-points compared to others) in attachment styles predicted several indicators of well-being, including vitality, self-esteem, negative affect, and performance self-concept, as well as basic psychological need satisfaction within the coaching and parental relational contexts. Second, it aimed to examine whether within-person changes and between-person differences in basic psychological needs satisfaction within the two relational contexts predicted well-being outcomes. Previous research has shown the mediating role of basic psychological needs satisfaction in the association between attachment and well-being (e.g., Felton & Jowett, 2013; La Guardia et al., 2000), therefore we did not examine these effects. Rather, we aimed to disentangle the within- and between-person relationships of each stage of the process using a longitudinal design. Previous research has demonstrated variations in attachment can occur in relatively short periods of time, and that attachment has the potential to predict changes in

relational factors at six month intervals (e.g., Asendorpf & Wilpers, 2000; Baldwin & Fehr, 1995; Fraley, 2002; Rholes et al., 2001). These findings suggest that assessing attachment at short-term intervals may allow for variations to be observed that studies employing long-term intervals e.g., measured once a year for several years could potentially miss.

It was hypothesized that sport performers' avoidant and anxious attachment styles would positively predict negative affect and negatively predict vitality, self-esteem, and performance self-concept at both levels of analysis (H1). Moreover, it was also hypothesized that basic psychological needs satisfaction within each of the distinct coaching and parental relational contexts would positively predict well-being outcomes and negatively predict negative affect at both levels of analysis (H2). Finally, it was hypothesized that sport performers' avoidant and anxious attachment styles would negatively predict basic psychological needs satisfaction in the individual relational contexts at each level of analysis (H3).

Method

Participants

One hundred and ten athletes (68% female) aged between 15 and 32 years (M = 20.96, SD = 3.07) participated in the study. The athletes were predominately White British (94%) and participated in a range of individual (51%; e.g., athletics, badminton, martial arts, and triathlon) and team (49%; e.g., basketball, cricket, football, hockey and rugby) sports at various competitive levels, including club (34%), university (24%), regional (17%), and national or international (25%).

Measures

Attachment. The Experiences in Close Relationships - Short version (ECR-S; Wei, Russell, Mallinckrodt, & Vogel, 2007) was used to measure athletes' attachment style by assessing how they generally feel in close relationships. The ECR-S was developed by Wei et al. (2007) as a more compact tool for researchers to utilise whilst still maintaining the reliability of the original ECR (Brennan, Clark, & Shaver, 1998). The ECR-S is composed of two subscales measuring anxious and avoidant styles, with the items rated on a 7-point scale ranging from 1 (*disagree strongly*) to 7 (*agree strongly*). The scale has demonstrated acceptable internal reliability during development with Cronbach's alphas ranging from .77 to .86 for the anxiety subscale and .78 to .88 for the avoidant subscale. In addition test-retest reliabilities for the ECR-S were reported as r = .80 and .83 for the anxiety and avoidant subscales respectively (Wei et al., 2007). The scale has also shown acceptable reliability in previous research employing sport performers with alpha values of .72 and .70 reported for the anxiety and avoidant subscales respectively (e.g., Felton & Jowett, 2013).

Psychological Need Satisfaction. The Need Satisfaction Scale (NSS; La Guardia et al., 2000) was used to assess the degree to which the basic psychological needs of the athlete were satisfied by the coach and parent. The NSS was developed to measure the extent to which significant others (e.g., mother, father, romantic partner) support an individual's basic psychological needs of autonomy, competence, and relatedness. The NSS contains three subscales containing 3 items each which were rated on a 7-point scale ranging from 1 (*not at all true*) to 7 (*very true*). A composite needs satisfaction score was used by calculating the mean of the three subscales. For the purpose of this study participants completed the items with reference to their coach and parents separately. Internal reliability for overall need satisfaction with various significant others (e.g., parent, romantic partners, friends) have been reported in previous research (e.g., La Guardia et al., 2000).

Vitality. The 6-item version of the Subjective Vitality Scale (SVS; Bostic, Rubio, & Hood, 2000) was used to assess perceptions of mental and physical alertness and energy in general terms. Items were rated on a 7-point scale ranging from 1 (*not at all true*) to 7 (*very true*), with one item reverse coded and then an average was calculated to represent overall vitality. Strong internal reliabilities of the scale have been reported in previous research (e.g., Bostic et al., 2000; Patrick et al., 2007).

Self-Esteem. The 10-item Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965) was used to assess individuals' self-esteem. The items were rated on a 4-point scale ranging from 0 (*strongly disagree*) to 3 (*strongly agree*). The overall self-esteem score was calculated by the average of the items' scores, and the negatively worded items were reverse scored. The internal reliability of the scale has been reported in previous research (e.g., Bylsma, Cozzarelli, & Sumer, 1997; Leak & Cooney, 2001).

Negative Affect. The International Positive and Negative Affect Schedule - Short Form (I-PANAS-SF; Thompson, 2007) was employed to assess the level of negative affect experienced by the athletes. The I-PANAS-SF contains 10 items that originate from the Watson, Clark, and Tellegen (1988) 20-item PANAS. The items were rated on a 5-point scale ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). An average was calculated for the scale to represent overall negative affect. Internal reliability and validity of the scale has been demonstrated in previous research (e.g., Thompson, 2007; Felton & Jowett, 2013).

Performance Self-Concept. The 6-item performance self-concept subscale of the Elite Athlete Self-Description Questionnaire (EASDQ; Marsh, Hey, Johnson, & Perry, 1997) was used to measure the athletes' perceptions/evaluations of their sporting performance. Items were measured on a 6-point scale ranging from 1 (*false*) to 6 (*true*). Overall performance self-concept was calculated by an average of the item scores. The scale as a whole has been found to possess sound psychometric properties (Marsh et al., 1997) with

consistently excellent reliability scores for the subscale in question (e.g., Jowett, 2008; Jowett & Cramer, 2010).

Procedure

Following ethical approval from the authors' university ethical advisory board, National Governing Sport Bodies (NGBs) and a range of university, local, county, and regional teams from across the United Kingdom were contacted regarding participation in the study. In total two hundred and forty athletes were contacted, with one hundred and ten (46%) completing the questionnaires. The questionnaires were available to the athletes either as a hard copy or an electronic copy. Athletes were instructed to read the information sheet before giving their informed consent. Athletes under the age of 18 were instructed to gain parental consent before taking part in the study. The participants completed the questionnaire at three time points, each separated by three months. There was no dropout of participants between time points one and two, however thirty one participants did not complete the questionnaires at the third time point. Those that dropped out of the study at this point were aged between 15 and 30 years (M = 20.6, SD = 3.0), mostly female (68%), of White British ethnicity (97%) and participated in individual sports (52%). There were no participants who completed the questionnaires at time points one and three whilst missing time point two. Participants who did not complete all three time points remained in the analysis, however, because multilevel modelling does not require an equal number of responses from each participant (Singer & Willett, 2003).

Data Analysis

Utilising MLwiN software (version 2.22; Rasbash, Charlton, Browne, Healy, & Cameron, 2009), multilevel models (Raudenbush & Bryk, 2002) were used to test the study hypotheses. The first step was to construct intercept-only models whereby no predictor variables were included for all the study variables in order to examine the amount of variance

attributable to the within- and between-athlete levels. The purpose of intercept-only models was to deconstruct the variable variance associated with level-1 errors (within-athlete) and the variance associated with level-2 errors (between-athlete) (see Hox, 2002). These models allow intraclass correlation coefficients (ICCs) to be computed in order to describe the proportion of variance attributed to the between-athlete and within-athlete levels.

In the second step, models were formulated to test the primary study hypotheses. In order to test whether within-person changes in attachment style predicted the well-being outcome variables, avoidant and anxious attachment were group mean centered on each participants' mean score and entered into the level-1 multilevel equation (H1). Between-person differences in attachment style and their associations with the well-being outcomes were examined by grand mean centering the two attachment styles and entering them into the level-2 equation (H1). All predictor variables were examined as both fixed effects and random effects across participants, and were included in the final models as random effects if the variance of the slope was statistically significant. A similar procedure was followed to test relational need satisfaction as predictors of the well-being outcomes (H2), as well as attachment styles as predictors of coaching and parental need satisfaction (H3).

Results

Descriptive Statistics, Cronbach's Alpha Coefficients, and ICCs

The means, standard deviations, Cronbach's alpha coefficients for all study variables at each of the three time points, along with ICCs for each variable, are shown in Table 1. All variable subscales demonstrated acceptable internal consistency. Athletes reported levels of avoidant and anxious attachment, as well as negative affect below the midpoint of the scale, whereas all remaining variables were above the midpoint of the scale on average. The ICC values indicated that between 0 and 31% of the variance in the variables was at the between-

person level, therefore, between 69 and 100% of the variance in the variables was at the within-person level. It is of particular note that between 70 and 78% of the variance in the two attachment styles was at the within-person level.

[INSERT TABLE 1]

Attachment Styles as Predictors of Well-Being Outcome Variables

Table 2 provides results of the multilevel growth models for each outcome variable and is summarized below.

[INSERT TABLE 2]

Vitality. At the within-person level changes in anxious attachment negatively predicted vitality, whereas changes in levels of avoidant attachment did not predict vitality. At the between-person level athletes with higher scores on the avoidant and anxious attachment on average reported lower levels of vitality.

Self-Esteem. At the within-person level changes in avoidant and anxious attachment negatively predicted athletes' self-esteem. Similar results were found for the between-person level where avoidant and anxious attachment negatively predicted self-esteem.

Negative Affect. At the within-person level changes in both avoidant and anxious attachment positively predicted negative affect. At the between-person level avoidant and anxious attachment positively predicted negative affect.

Performance Self-Concept. At the within-person level only changes in avoidant attachment negatively predicted changes in performance self-concept. At the between-person level again only avoidant attachment negatively predicted performance self-concept.

Attachment Styles as Predictors of Psychological Need Satisfaction Variables

Table 3 provides results of the multilevel growth models, a summary of the results for each outcome variable follows.

[INSERT TABLE 3]

Basic Needs Satisfaction with Coach (BPNS-C). At the within-person level changes in avoidant and anxious attachment did not predict changes in BPNS-C. At the between-person level only avoidant attachment negatively predicted BPNS-C.

Basic Needs Satisfaction with Parent (BPNS-P). At the within-person level only changes in avoidant attachment negatively predicted changes in BPNS-P. At the between-person level again only avoidant attachment negatively predicted BPNS-P.

Psychological Need Satisfaction as Predictors of Well-Being Outcomes

Table 4 provides results of the final set of multilevel growth models and a descriptive summary follows.

[INSERT TABLE 4]

Vitality. At the within-person level changes in BPNS-P positively predicted changes in vitality. At the between-person level both BPNS-C and BPNS-P predicted vitality.

Self-Esteem. At the within-person level changes in BPNS-C and BPNS-P did not significantly predict changes in self-esteem. At the between-person level, only BPNS-P positively predicted self-esteem.

Negative Affect. At the within-person level changes in BPNS-C and BPNS-P did not significant predict changes in negative affect. At the between-person level BPNS-P negatively predicted negative affect.

Performance Self-Concept. At the within-person level changes in BPNS-C and BPNS-P did not significantly predicted changes in performance self-concept. At the between-person level only BPNS-C predicted performance self-concept.

Discussion

The present study aimed to examine the degree to which athletes' within-person changes and between-person differences in attachment styles predicted several indicators of well-being (vitality, self-esteem, negative affect, and performance self-concept) and basic psychological needs satisfaction within both the coaching and parental relational contexts. An additional aim of the study was to examine whether within-person changes and between-person differences in athletes' basic psychological needs satisfaction within the two relational contexts predicted well-being outcomes.

Attachment Styles as Predictors of Well-Being Variables (Hypothesis 1)

Previous research (e.g., La Guardia et al., 2000; Wei et al., 2005) has demonstrated that securely attached individuals, reflected in low levels of anxious and avoidant attachment, experience greater levels of well-being and lower levels of distress. Consistent with previous research, findings from the current study showed that both anxious and avoidant attachment styles, at both the within- and between-person levels, were predictors of well-being outcomes. At the within-person level, change in anxious attachment negatively predicted vitality and self-esteem, whilst positively predicted negative affect. Therefore, if an athlete's level of anxious attachment increased, they experienced reduced vitality and self-esteem but increased negative affect as a result. Correspondingly, increases in an athlete's level of avoidant attachment resulted in reduced self-esteem and performance self-concept as well as an increase in negative affect. This is the first study that the authors are aware of, to examine these associations at the within-person level. These findings support hypothesis 1 and

highlight that if an individual athlete's global attachment style becomes more insecure, be it more anxious or avoidant, the likely outcome will be to experience reduced well-being and greater ill-being (negative affect). In line with attachment theory (Bowlby, 1969/1982), changes in an individual's attachment style could be indicative of subtle changes within their internal working models of attachment (Bowlby, 1973). These internal working models are developed according to the behaviour of significant others toward the individual. Based on the current findings it could be suggested that sport performers who begin to experience increased negative interpersonal behaviour, for example inconsistent support or lack of support over a period of time and within their relationships and interactions with significant others could start to develop negative working models of attachment that ultimately lead to changes in their global attachment style (Hamilton, 2000; Weinfield, Whaley, & Egeland, 2004). Subsequently, an individual who was secure may become insecure due to persisting negative social environmental conditions.

At the between-person level, mean differences in anxious attachment negatively predicted vitality and self-esteem, and positively predicted negative affect. Similarly, mean differences in avoidant attachment negatively predicted vitality, self-esteem, and performance self-concept, and positively predicted negative affect. Thus, athletes' who reported higher levels of anxious attachment experienced reduced vitality and self-esteem, and also experienced greater negative affect compared to athletes who reported low levels of anxious attachment. In the same vein, athletes who reported higher levels of avoidant attachment also experienced reduced vitality and self-esteem, as well as greater negative affect. However, they also reported less performance self-concept compared to athletes who reported low levels of avoidant attachment. These findings provide further support for the impact that attachment styles have on well-being (Felton & Jowett, 2013; La Guardia et al., 2000; Patrick et al., 2007), and more specifically, the impact that an athlete's avoidant attachment style has

on sport-specific outcomes, such as the perception of their ability to perform effectively (performance self-concept).

As the present study was an initial investigation into possible within- and between-person differences, athlete attachment was measured at the global level to encompass a perception of attachment style across different relationships. It would be interesting for future research to measure attachment in specific relationships in order to examine whether specific relationships are potentially more susceptive to cause subtle changes in attachment style. It could perhaps be expected that the attachment style individuals' display in the relationship with their parents remains stable over time as this in the longest and most enduring relationship an individual is likely to have. In addition, it is within the parental relationship that internal working models were originally developed, which influences one's attachment style in infancy and beyond (Ainsworth et al., 1978; Bowlby, 1969/1982). The attachment displayed in other types of relationships, for example, romantic relationships, peer relationships, and coaching relationships, could be more susceptible to change if the behaviour exhibited by the attachment figure (e.g., partner, peer, coach) provides a contrast to that experienced within the parental relationship. An understanding of the extent to which interpersonal behaviours within specific relationships can bring about changes in attachment perceptions could allow for more targeted interventions for improving individuals' well-being.

Attachment Styles as Predictors of Psychological Need Satisfaction (Hypothesis 2)

Cross-sectional research has previous shown the negative association between insecure attachment and psychological need satisfaction within relationships (e.g., Felton & Jowett, 2013; La Guardia et al., 2000; Wei et al., 2005). The present study reported similar findings at both the within- and between-person levels regarding avoidant attachment.

Specifically, at the within-person level avoidant attachment negatively predicted psychological need satisfaction in the parental relational context. This suggests that if an athlete reports increases in avoidant attachment they will also perceive reduced psychological need satisfaction from their parent. Similarly, at the between-person level mean differences in avoidant attachment negatively predicted need satisfaction in both the parental and coach relational contexts. Therefore, athletes who reported high levels of avoidant attachment experienced less need satisfaction from their parent and coach than athletes who reported low levels of avoidant attachment. The findings highlight that only those athletes reporting avoidant attachment experienced significant reductions in need satisfaction within the parental and coach relational context. This can be explained through research by Bowbly (1973) who proposed that those with avoidant attachment perceive others as being unsupportive and unavailable and therefore they develop a negative working model of attachment driven by the expectation that they will not receive support. Thus, in the present study if the athletes reported greater avoidant attachment they had increased expectations that no support would be provided and this transpired in the negative association to need satisfaction within the parental relational context, at both the within- and between-person levels, and the coach at the between-person level. However, it is important to note that previous research (Felton & Jowett, 2012) has shown that avoidant individuals' perceptions of need satisfaction are influenced by their experiences of social supportive and autonomy supportive behaviours directed towards them by both coaches and parents. Specifically, if an avoidant individual experienced high levels of supportive behaviours they perceived greater need satisfaction as a result (Felton & Jowett, 2012). Therefore, avoidant individuals are likely to perceive greater need satisfaction within the parental and coach relational contexts, if parents and coaches employed interpersonal behaviours that underlined their willingness to

provide support, encouragement, and co-operation, as well as autonomy, choice and independence.

In contrast no significant findings were reported regarding the coach need satisfaction and anxious attachment. The lack of significant findings pertaining to need satisfaction within the coaching relational context and anxious attachment is in line with previous research (Felton & Jowett, 2013). These findings suggest that athletes' anxious attachment style has no impact on their perception of psychological need satisfaction within the coaching relational context. This finding could be explained due to attachment being measured at the global/general level. The athletes' global attachment style, as a measure of how the athletes' perceive their relationships in general, may be more reflective of the attachment style developed in infancy following interactions with their parents (usually the mother). However, the non-significant association of anxious attachment to need satisfaction from the parent at the between-person level is contrary to previous cross-sectional findings. Further research examining these associations within specific relationships, for example the athlete's attachment style related to the coach and parent, would help determine whether these results are reliable and consistent across different types of relationships that to some degree serve different functions or whether specific attachments vary in their associations to psychological need satisfaction.

Psychological Need Satisfaction as Predictors of Well-Being Outcomes (Hypothesis 3)

The final set of findings was related to how psychological need satisfaction predicted the well-being outcomes. The findings of previous cross-sectional studies have shown that psychological need satisfaction within various contexts (e.g., Felton & Jowett, 2013; Gagné et al., 2003; La Guardia et al., 2000; Reinboth et al., 2004) results in individuals experiencing greater well-being. Similar findings have also been previously reported in longitudinal

research (Reinboth & Duda, 2006). At the within-person level need satisfaction in the parent relational context positively predicted vitality. Consequently, if an athlete's perception of need satisfaction within the parent relationship increases they will experience increases in vitality. At the between-person level, mean differences in need satisfaction within the coach relational context positively predicted athlete vitality and performance self-concept. Likewise, mean differences in need satisfaction within the parent relational context positively predicted vitality and self-esteem whilst negatively predicting negative affect. These findings are in line with previous research (Felton & Jowett, 2013) and show that athletes who perceive greater need satisfaction within these relational contexts experience greater well-being than those who experience less need satisfaction. Interestingly both relational context predicted vitality while the coach relational context predicted performance self-concept and the parent relational context predicted general self-esteem. These findings highlight the importance of need satisfaction within both relational contexts for predicting complementary functions (vitality), but also the importance of paying attention to context-specificity. For example, an important finding relating to sport was that perceptions of need satisfaction in the coach context positively predicted perceptions of performance self-concept, thus an athlete will perceive themselves as a more capable and effective performer if their needs are met in the coach relationship. Additionally, perceptions of need satisfaction in the parent context, unlike the coach context, were also a predictor of reduced negative affect experienced by the athletes. These findings suggest it is only the parent who can influence experiences of ill-being. As such the current findings show that when considering experiences of well-being, need satisfaction within a range of relationships should be considered in order to achieve a complete understanding of how the social environment in which individuals' operate affects them psychologically.

Limitations, Future Research and Practical Applications

Whilst this study presents a number of new findings that can contribute towards a better understanding of the role attachment plays in perceptions of psychological need satisfaction and well-being, limitations are present. The age range of the current sample should be acknowledged as a limitation within the current study. Participants ranged from fifteen years of age to thirty two years of age, indicating that some participants were at different developmental stages within their sport. It may be that younger participants perceive needs satisfaction differently to the more mature participants and thus the relationship to well-being may have been different. Similarly accuracy of attachment perspectives could be expected to differ due to the older participants having more relationship experiences to draw upon. However, previous research has suggested that attachment styles remain relatively stable across the lifespan and stages of development (Fraley, 2002). With these limitations in mind, future research could focus on participants who are all at the same stage of development (e.g., early adolescence or early adulthood) or control for age within the study design. Similarly, the sample contained athletes who competed at a range of competitive levels from club to international. Those competing at the club or university level could have different expectations of their parents and coach in terms of satisfying their psychological needs in comparison to athletes at the national or international level. Therefore the current findings cannot be generalised to all athletes and future research could examine this further by comparing athletes at different competitive levels. Individuals' attachment was measured at the global level and not at the level of the specific relational context (i.e., coach-athlete and parent-child/athlete). This may have resulted in the lack of significant within-person findings for the associations between attachment and need satisfaction within the coaching relational context. Future research that aims to study and measure attachment within specific relationships (e.g., coach-athlete, parent-child) could provide more detailed and specific information about the associations investigated here but also about the interplay of these

distinct yet related attachment bonds. A second limitation is that psychological need satisfaction was measured as a composite factor, therefore not allowing the current study to make inferences regarding the importance of each basic need in the associations examined. Although all three needs must be satisfied for optimal psychological growth (Deci & Ryan, 2000), understanding the importance of attachment style on each need and subsequently each needs effects on well-being would be useful information for targeting specific needs for interventions.

A further limitation was that self-report measures of the study variables were used, creating the possibility for bias in the individuals' responses. However this limitation may have been reduced as the three time points were spread across several months and athletes did not have access to their previous responses, reducing the chance that they simply copied their previous responses. Finally, only need satisfaction was measured in the current study. Research (e.g., Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011) has demonstrated psychological need thwarting as an important variable to consider alongside need satisfaction when assessing well-being. As need thwarting is associated to negative aspects of the social environment and ill-being it could be expected that insecure attachment (anxious and avoidant) would show strong associations to need thwarting.

The present study adds to the literature by exploring within-person change and between-person differences in attachment and the impact on need satisfaction within two important relational contexts (coach and parent) and well-being. It also shows within-person change and between-person differences in need satisfaction within these relational contexts and the subsequent impacts on well-being. These findings provide a platform for future research whilst also demonstrating the importance of understanding both individuals' attachment and basic needs satisfaction for improved well-being.

Clinical Implications

From a practical viewpoint, these findings show that an athlete's attachment style is an important factor to consider in understanding perceptions of well-being over time, both in changes within an individual and differences between individuals. Specifically, behaviours exhibited by the individual's attachment figures (parent, coach) that influence the individual's internal working models of attachment, either positively or negatively, could over a period of time change the individual's attachment perspective. For example, if a coach made consistent efforts to display caring, supporting, trusting, committed, and cooperative behaviours with his or her athletes, then such coaching behaviours would be especially significant to athletes who display more insecure attachment. Insecurely attached athletes whose coaches manifest continuously positive behaviours are likely to promote the development of internal working models of attachment that are more secure over time. Our findings also support the notion that, at the between-person level, differences in perceptions of need satisfaction within the coaching and parental relational contexts affect well-being; therefore if a coach/parent wants their athlete/child to experience high levels of vitality, self-esteem, and performance self-concept, whilst experiencing low negative affect, they should aim to satisfy their basic psychological needs. The findings related to attachment and psychological needs satisfaction are intrinsically linked. If the relationship between an athlete and their coach, for example, can be developed in such a way that there is a fundamental adjustment in the athlete's perception of attachment, it is likely they will perceive that their psychological needs are being satisfied. A combination of reduced insecure attachment and increased needs satisfaction is likely to have a positive impact on the well-being of the athlete. However, as noted earlier in this study, whilst short-term changes in attachment may result from environmental changes it will require consistent change to lead to a fundamental adjustment in attachment style (see Fraley, 2002). Therefore coaches should be encouraged to maintain positive relational behaviours with their athletes even if they appear to have no initial impact

on the athlete's behaviour. This would potentially involve educating coaches in attachment styles and the different behaviours that can be manifested by those displaying insecure attachment.

Conclusion

The present study provides additional knowledge into associations rarely examined within sport psychology research utilising a longitudinal design. Overall, our findings have built upon previous cross-sectional research into attachment, need satisfaction, and well-being (e.g., Felton & Jowett, 2013; La Guardia et al., 2000) by showing the unique within-person changes in attachment and psychological need satisfaction and the ability of these changes to predict well-being. The findings highlight that, whilst attachment styles are recognised as fairly stable across an individual's life span and can promote an understanding of "human behaviour from the cradle to the grave" (Bowlby, 1979, p. 129), increases in feelings of insecure attachment can impact on athlete well-being. Additionally, athletes' experiences of psychological need satisfaction within the parental relational context were shown to decrease as a result of within-person changes in avoidant attachment. This finding becomes potentially more important when considering that within-person change in need satisfaction within the parental relational context was the only significant predictor of change in well-being (vitality). Therefore, if an individual begins to feel increased avoidant attachment this is likely to result in perceiving less need satisfaction from their parent, which can then cause the individual to experience reduced vitality. Clearly, parents remain influential in adults' well-being, especially when they are likely to have insecure attachment tendencies.

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Table 1.
Means, Standard Deviations (SD), Cronbach's Alpha Coefficients and Intraclass Correlation Coefficients (ICCs) for all Study Variables.

	Time Point 1			Time Point 2			Time Point 3			
Variable	**Mean**	**SD**	**α**	**Mean**	**SD**	**α**	**Mean**	**SD**	**α**	**ICC**
Anxious	3.47	1.04	.70	3.60	1.04	.69	3.52	1.09	.74	.22
Avoidant	3.17	.91	.66	3.24	1.15	.80	3.19	1.13	.81	.30
BPNS-C	4.91	1.14	.89	4.07	.60	.90	4.14	.60	.90	.07
BPNS-P	5.87	1.00	.90	4.75	.44	.91	4.68	.44	.93	.00
Vitality	5.19	1.10	.87	4.98	1.24	.94	5.14	1.24	.94	.24
Self-esteem	1.84	.74	.91	2.09	.60	.91	2.13	.55	.90	.28
NA	2.13	.65	.65	2.15	.66	.70	2.00	.62	.72	.28
Performance self-concept	4.06	1.04	.93	4.15	1.05	.94	4.19	.97	.96	.31

Note: Self-esteem uses a 0-3 scale

Table 2.

Multilevel Growth Models Exploring Within- and Between-Person Variability in Attachment Style as Predictors of Vitality, Self-Esteem, Negative Affect, and Performance Self-Concept

	Vitality	**Self-esteem**	**Negative Affect**	**Performance SC**
Predictors	**β (SE)**	**β (SE)**	**β (SE)**	**β (SE)**
Intercept	5.09 (.08)*	2.00 (.05)*	2.14 (.04)*	4.13 (.06)*
Within-person relationships				
Anxious	-.30 (.08)*	-.14 (.05)*	.18 (.06)*	.00 (.07)
Avoidant	-.21 (.11)	-.16 (.05)*	.13 (.05)*	-.19 (.09)*
Between-person relationships				
Mean anxious	-.31 (.12)*	-.21 (.06)*	.29 (.06)*	-.11 (.09)
Mean avoidant	-.34 (.10)*	-.25 (.05)*	.23 (.06)*	-.30 (.09)*

*****$p < .05$

Table 3.

Multilevel Growth Models Exploring Within- and Between-Person Variability in Attachment Style as Predictors of Basic Psychological Needs Satisfaction from the Coach and the Parent

	Needs Satisfaction Coach	**Needs Satisfaction Parent**
Predictors	**β (SE)**	**β (SE)**
Intercept	4.72 (.06)*	5.56 (.06)*
Within-person relationships		
Anxious	-.11 (.09)	-.07 (.09)
Avoidant	-.11 (.11)	-.26 (.09)*
Between-person relationships		
Mean anxious	-.08 (.09)	-.08 (.08)
Mean avoidant	-.24 (.08)*	-.29 (.08)*

***p* < .05*

Table 4.

Multilevel Growth Models Exploring Within- and Between-Person Variability in Basic Psychological Needs Satisfaction from the Coach and Parent as Predictors of Vitality, Self-Esteem, Negative Affect, and Performance Self-Concept

	Vitality	**Self-esteem**	**Negative Affect**	**Performance SC**
Predictors	**β (SE)**	**β (SE)**	**β (SE)**	**β (SE)**
Intercept	5.09 (.08)*	2.00 (.04)*	2.14 (.05)*	4.11 (.07)*
Within-person relationships				
Needs satisfaction coach	.14 (.08)	.04 (.04)	-.04 (.05)	.06 (.06)
Needs satisfaction parent	.19 (.08)*	.05 (.04)	-.09 (.05)	.05 (.07)
Between-person relationships				
Mean needs satisfaction coach	.28 (.12)*	.05 (.07)	-.09 (.07)	.31 (.10)*
Mean needs satisfaction parent	.47 (.14)*	.24 (.07)*	-.26 (.08)*	.17 (.12)

*****$p < .05$